Paradoxical Paradigm Proposals

Learning Languages in Mobile Societies

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Abstract

The concept of paradigms gives us the capacity to look analytically at historical scientific and intellectual episodes in a broader framework. It does however potentially also give us the capacity to look more analytically at contemporary scientific and intellectual activity and make conjectures and predictions. This paper looks at various contemporary pedagogic paradigms, including language learning and mobile learning, and suggests both their failings and then their replacement by an over-arching pedagogic paradigm more suited to societies permeated by personal digital technologies. This might be called the ***mobility, learning and language*** *paradigm. The paper uses these examples as a way of exploiting paradigmatic thinking in order to catalyse intellectual progress.*

Keywords*: social, digital, language, learning, paradigms and mobility*

This paper argues for the emergence, definition and promotion of a new educational paradigm, and highlights its application for adult language learning. This follows on from *mobile open social language learning*, or MOSLL, discussed elsewhere (Traxler et al 2018) and explored in the SWITCHED-ON project[i]. The authors argue that what are clearly its apparent predecessor educational paradigms, namely mobile learning, open learning, and social learning, are now inadequate since perhaps the start of the current decade[ii], and make a *paradigm shift* necessary and imminent. Such a shift is not envisaged as an incremental

change to what currently exists, or a convergence of one or more existing paradigms, but a fundamental departure from what currently exists.

The form of the argument is along Kuhnian (Kuhn 1970) lines, in looking at how these apparent predecessor or component paradigms are constituted and how discomforts, disquiets or discrepancies at their respective margins together constitute the impetus or justification for an incipient paradigm shift and thus for the emergence of a new paradigm. The authors reflect on the possibility that the existing paradigms grow out of a specific philosophical, in fact modernist, milieu and out of a particular set of political, technological and economic circumstances and that perhaps we need a new paradigm to cautiously reflect the new milieu with its new circumstances. In this sense there is a resonance with the ideas of evolutionary epistemology (Bradie 1986), especially the notion that knowledge itself evolves by something like Darwinian natural selection.

The purpose of this paper is to stimulate and provoke researchers in various communities to think about their work, their direction and findings in a wider context, and to raise helpful and productive questions. The structure of the paper is first to briefly explain the nature of paradigms and paradigm shifts and then test their relationship with innovations and their diffusion, and to critique some existing paradigms and some aspects of culture and politics in which they exist in order to finally enunciate a new paradigm.

Paradigms in Crisis

The argument for the paradigmatic crisis in canonical mobile learning has already been made (Traxler 2019a) but centres around mobile learning's foundational axioms being situated in settings where mobile devices were scarce, fragile, difficult, expensive, where learning with mobiles was innovative and institutional (and research was the consequence of specific

economic and political conditions) and where the research community's mind-set was a legacy or inheritance from 1990s e-learning. Mobile learning, as defined in general terms to be learning mediated by personal connected mobile digital technologies (Traxler 2008), has now ironically become static, stuck in institutions that are not moving forwards, doing what it did ten years ago but to ever-smaller audiences. Authors still refine their definitions of 'mobile learning' but our worry is that these treat learning itself as unchanged and unchallenged (Traxler 2018a). While there is a plethora of different definitions, some key characteristics can be identified, namely that learning can be extended in terms of its reach or catchment and enhanced and enriched in terms of its experience (Traxler 2019b). Implicit in these definitions is however little evidence that learning itself is changing as the nature of society changes together with its relation to technology within it.

Open learning, has been defined in general terms as learning that is accessible regardless educational qualifications, educational experiences and educational expectations (Keegan 1990). Whilst there are many different definitions, the focus is on the nature and meaning of 'open' rather than the nature and meaning of 'learning'. As such, it can be argued to be a manifestation of the open movement, is clearly a paradigm in trouble (e.g., Knox, 2013; Atkins *et al* 2007) and historically confused with distance learning (Lewis, 1986; Rumble, 1989). It is continuing to refine its principles, diversify its constituent disciplines and multiply its artefacts, whilst struggling to break through to wider popular acceptance and take-up in spite of continued official endorsement and in the face of the much stronger appeal of free systems, free software and free access. Open learning is stuck between the flat unstructured participative Web2.0 ideologies that it espouses and the hierarchic standards-driven Web1.0 institutions that try to promote it.

Social learning has been defined as individual learning that takes place in a social context and is hence influenced by social norms. Alternatively, it might be a process of social change in which people learn from each other in ways that can benefit some wider social-ecological system. It might be learning how to collaborate (Reed *et al* 2010). It is perhaps by its nature least easy to pin down as a clear paradigm and that may be its weakest point. *Sociality* has changed and *digitality* is now a major factor or ingredient; mobility and connectedness are ever increasing determinants of social life for a large proportion of adults in globally rather than geographical proximity and traditional groupings. The emerging sociality of mobility and connectedness defines its own learning, and this is part of our argument.

Language teaching as pedagogic practice suffers from a lack of response to the fluidity and fragmentation of language, brought about by the multicultural influence of different groups communicating online, extending its vocabulary and syntactic structures. Whilst languages have always been fluid, we argue that the scale and agency of that fluidity is vastly altered. It also suffers from a lack of recognition that personal digital technologies are not dumb or inert or passive conduits and receptacles of language (Traxler 2013, 2017, latter work refers specifically to the global South but is in fact generalizable). They are now deeply complicit in the transformation of language and its social and epistemological context (Traxler 2018b). Furthermore, language learning embraces a rather different and broader demographic and economic context, one populated by publishers and commercial schools, with a different take on change and shift, currently governed by a range of very specific business models which seem stuck in apps and courses.

We should emphasise at this point, because it becomes significant later, that the choice of language as a domain is not arbitrary. In fact, we regard learning in general and learning a language in particular as almost synonymous at a conceptual level. Learning to converse with Germans and enter their community and culture is no different in essence from learning to converse with physicists and enter their community and culture, and is the mark of acceptance and competence.

While subsequent observations and analyses may refine or refute this initial position, there is however, an underlying assumption that any paradigm has a finite lifetime and carries within it the seeds of its own destruction. As the associated community mines out the obvious research questions and fills in all the blanks, it heads to the more uncertain periphery. In short, the paradigm, like Ourobus, is destined to eat itself and destroy its children[iii].

Common to all of these paradigms is a failure to recognise that technology is no longer an inert add-on, comprised of, to repeat ourselves, dumb passive conduits and containers for language and/or learning. It is part of a dynamic – language, learning and digital technology are intrinsic and pervasive aspects of our societies, the same thing from three different angles. Specifically, even talking about *technology* is still seeing it as *other*.

This may point to specific but implicit common assumptions or tacit axioms that spring from the underlying modernist culture of all the paradigms we explore. There is a belief that teachers and their institutions should do the teaching and should do this from authoritative and canonical texts, that the nature of language, learning and society are stable and coherent enough for this to happen, that the methods, approaches and attitudes of the past fifty years can be extrapolated to the next fifty years, and that the role and purposes of

education will continue to be largely taken-for-granted. There is also the remembrance of a society that was pre-digital, one that can still conceptualise technology as something that was added into society within living memory.

We should point out that we used definitions, albeit deliberately slightly vague ones, to define the paradigms but should in fact recognise that paradigms are social phenomena and perhaps it would be more accurate to say something like, 'mobile learning is what people talk about at mobile learning conferences'.

It is of course also possible that these earlier paradigms all developed within a paradigm of *innovation*, in the economically and politically benign climate before the crash of 2008[iv] and the rise of the neo-liberal marketisation of higher education, and that the failure of these earlier paradigms is merely the failure of the innovations paradigm to nurture and sustain its various progeny. Certainly the rhetoric and lexicon of *innovation*, derived from Rogers' account (2010), for example *critical mass*, *early adopters* etc, was itself a clear example of a paradigm - it had axioms, advocates and orthodoxies - but its downfall, its catalyst for a paradigm shift and a new account of change, was the almost comprehensive failure of *innovations*, that is those changes that explicitly bought into the rhetoric and mechanisms derived from the canonical *diffusion of innovations* account, to endure, diffuse and sustain. This analysis might in part account for the rise of alternative formulations such as the *theory of change (ToC*[v]*)*(Taplin *et al* 2013), currently popular with the international development community. The 'fluffy' evidence base for *innovation* and the lack of rigour did probably not help either and illustrate the fact that paradigms are not intrinsically evidence-based, since paradigms provide the context for evidence and evidence cannot stand outside paradigms.

A side effect of this discussion might be to stimulate the search for metrics of indicators of a paradigm's progress and maturity. Would bibliometric data, conference attendances and textual analysis tell us something about the cohesion, saturation and future of a paradigm?

So, we are keen to develop a new paradigm out of a critique or analysis of earlier paradigms in paradigmatic terms.

The Process

We will be analysing and critiquing the existing paradigms (in perhaps a mechanical, modernist and fundamentally Kuhnian fashion) in order to arrive at 'our' new paradigm by a logical and repeatable process, as much for the method as for the outcome. The ways in which we phrase our project seems to perfectly justify such an approach if we want a theoretical justification alongside any empirical or practical ones.

We will attempt to make the case that the emergence of a new paradigm is justified by a strictly canonical approach to the concept of paradigms. As we are specifically talking about a paradigm shift in the organisation of ideas, this discussion should however take place in a broader discussion of forms of change.

We would recognise that much of our current argument for the apparent sclerosis of paradigms rests on expertise and experience rather than evidence, and we hope that in future it would be possible, perhaps with more sophisticated bibliometrics and data analytics, to recognise a research paradigm that was struggling past maturity. Perhaps the proportion of circular citations or the reliance on dated definitive publications or the lack of new authors

would be useful metrics. Perhaps data analytics working on research semantics would make this possible.

The diffusion of innovations framework (Rogers 2002) is also an account of change, of change travelling through communities, organisations and societies, change that may be behavioural, societal, ideological, technical, commercial, ... whatever, and crucially the accepted innovation framework attempts to identify those characteristics of the situation that determine whether an innovation, shift or change, will be successful. If we equate our proposed paradigm shift to the diffusion of an innovation, then we have another perspective on our arguments. There is of course an element of interdependence here - the diffusion of innovations is a widely accepted paradigm (and may shift) and paradigm shift, and the acceptance of a paradigmatic viewpoint, is the successful diffusion of an innovation. We hope however to use the similarity between innovations and paradigm shifts as the basis for our discussion.

Learning too is, at an individual level, both a paradigm shift, since it transforms learners' conceptions, and an innovation, since it represents the replacement of old understandings by new ones. This does however promote a particularly transformative view of learning, one that is culturally specific and sets learning in a juxtaposition with *mere* training, with phrases like *job-ready employment skills* demonstrating the ambivalence and ambiguity that happens between these extremes.

Laying out the Foundations; Asking the Questions

So, to start, we must recollect exactly what is meant and what is implied by a paradigm and then what is implied by an innovation, in order to discuss whether our new paradigm is likely to be a successful innovation and whether it will precipitate and encapsulate a paradigm shift.

These questions address our topic from a slightly different angle - in effect, firstly, is a paradigm shift anticipated by an analysis of existing paradigms in the way that we propose here and secondly will our new paradigm cohere and propagate successfully?

We set out earlier the defining characteristics of innovations and paradigms and then apply them. Our central questions are,

- what are the characteristics of a paradigm and what precipitates a shift in paradigms?
- what constitutes an innovation and what governs its diffusion?
- what is the role of culture in change?

Firstly, what are the characteristics of a paradigm and what precipitates a shift in paradigms?

A *paradigm* (Kuhn 1970) is characterised in practice by a community of adherents, some central axioms to which they adhere and then derived from these, the textbooks, professional bodies and exam questions used to enforce orthodoxy, and the research agenda used to extend it. It is definitely a social phenomenon not an abstract intellectual one. It may resemble a community of practice devoted to a specific intellectual mission. In our case the communities adhering to the various paradigms are taken to be drawn from the wider population of academics in the globalised universities and research institutes. As it matures, the community explores more and more of the consequences and questions that follow on from its foundational axioms and its adherents consolidate their beliefs in textbooks, professional bodies, institutes and journals, to use appropriate modern forms. This would mark the paradigm as vigorous and mature - and there might be a comparison here between the advance of the paradigm and the diffusion of an innovation. Necessarily it seems, as the more obvious and central details are filled in, the focus of enquiry moves further away from the central axioms and what seem to be anomalies, discrepancies, mistakes and contradictions

start to appear. The literature is full of examples, the most frequent being the rise of heliocentric astronomy, the rise of Darwinian evolution, the rise of object-oriented programming, the rise of grounded theory and the rise of special relativistic physics. It would be methodologically fair to ask whether there were examples of paradigms where no such anomalies, discrepancies, mistakes and contradictions appeared and no shift took place, fair but in the current context irrelevant.

It would also be fair to ask whether these anomalies, discrepancies, mistakes and contradictions constituted evidence that would decisively resolve which paradigm, the established or the challenger, was objectively correct. At this point, we should emphasise that evidence of itself does not refute or support competing paradigms, in that paradigms provide the context in which evidence can be understood. So, the fossil record that might seem to support theories of Darwinian evolution and natural selection, might also have been planted by a mischievous creator to test our faith.

There is almost a resemblance between a paradigm shift and the catastrophes of *catastrophe theory*, those large-scale qualitative events triggered or presaged by a multitude of miniscule quantitative changes (Zeeman 1976) and so perhaps we should look for our incipient catastrophic paradigm shift amongst the minute manifestations of academic or scientific data, perhaps bibliometric data, search terms, research grants or conference attendances.

Secondly, what constitutes an innovation and what governs its diffusion?

An *innovation*, specifically a successful innovation, is, according to the accounts of the diffusion of innovations (Rogers 2002), characterised in practice by four sets of characteristics, namely that successful innovation, meaning the spread, take-up and adoption

of a new idea, concept, practice, project, process or product or in our case a paradigm, depend on four broad characteristics, as follows. "*Diffusion* is the process through which (1) an innovation, the paradigm, (2) is communicated through certain channels (3) over time (4) among the members of a social system" (Rogers, 2002:990).

The first covers a range of general characteristics of the innovation itself. The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. These first set of characteristics are:

(1) relative advantage, namely is the innovation, the new paradigm, perceived as more advantageous than whatever it might supersede.
(2) compatibility, is the innovation perceived as consistent with the existing values, past experiences, and needs of potential adopters
(3) complexity, is the innovation perceived as difficult to understand and use.
(4) trialability, meaning, can the innovation be experimented with on a limited basis, with minimal commitment and risk.
(5) observability, is whether the results of an innovation are visible to others.

So, innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations. In our case, we ought to be able to conduct this analysis with paradigms to account for a successful paradigm after the shift.

Secondly, formal or mass media channels are more effective in creating initial knowledge of innovations, the new paradigm, whereas informal or interpersonal channels are more effective in forming and changing attitudes toward a new paradigm, and thus influencing the decision to adopt or reject it.

Thirdly, innovativeness is the degree to which an individual, organisation, social system or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system. And here we have the classic, five adopter categories of the members of the social system on the basis on their innovativeness, are: (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards. The success of the innovation depends on the composition of the social system in respect of these categories and they are in some respects representative of wider national, generational and national culture. It also depends on the processes used to spread the innovation through it (Rogers 2002).

Finally, the fourth factor is culture, in this case, academic or intellectual culture, and this carries us forward to a later part of our discussion. Rogers and others make the point that organisational and institutional, that is university, cultures differ, and may be, for example, collegial, command-driven, consensual or some variant or combination of these (Rogers and Shoemaker 1971; Baldridge 1971). We have to remember the observations about the extent to which universities in particular embody and embrace conflicting cultural modes simultaneously, from the managerial top-down culture to the collegial and consensual, albeit competitive, culture of the academics (Winter 2009; Hellawell & Hancock, 2001). Rogers' work was widely used in educational technology during the era of innovation (Sahin, 2006).

Critics of the innovations approach would argue that the theory, if that's what it is, is flawed, in perhaps being based in particular Western consensual cultures and of only documenting successful innovations (Rogers & Adhikarya, 1979; Lyytinen & Damsgaard, 2001). We can ask about the evidence or experience of unsuccessful innovations, or

paradigms, but the literature is understandably a lot less forthcoming about events that did not actually happen.

One **subsidiary question** that arises from our organisation of this argument is whether, despite obvious differences in terminology, granularity, emphasis and provenance, these two accounts are talking about fundamentally the same thing. The subsidiary question is, are paradigm shifts and innovations that diffuse essentially the same thing?

So, having outlined the two concepts, we can now attempt an answer and attempt to relate it to our current concern, that of developing and defending a new paradigm. On balance, yes, there is sufficient similarity or overlap to make this a fruitful perspective. There might, of course, also be other relevant theories, accounts, approaches and viewpoints.

Academics Responding to Change (Trowler 1998) is one such. It describes and analyses how English university lecturers variously responded to a change in curriculum philosophy. There were various individual attitudes and behaviours in the academics confronting this change. There were apparently two dimensions, mutually independent, that would account for them:

i. one axis showing attitudes from *content* to *discontent*
ii. the other axis showing behaviour from *working around/changing policy* - or in our case - *paradigm,* to *accepting the status quo*

Combining these two dimensions gave four possible states

1. *swimming*, that is content and accepting *status quo*
2. *sinking*, that is discontent and accepting *status quo*
3. *using coping strategies*, that is discontent and working around/changing policy

4. *policy or rather paradigm reconstruction*, that is content and working around/changing paradigm

Whilst there are differences in granularity and focus, the analysis is another view of the likely range of reactions to an education innovation or a shift in educational paradigm, and could be said to define a range of possible sub-cultures within an academic institution. This earlier work obviously predates today's more managerialist, corporate and competitive universities in a world of globalised higher education informed by neo-liberal and consumerist ideologies (McNay 1995; Farnham 1999). Academics are under increased and rather different pressures to change (though no longer to *innovate*) and perhaps we need to adapt and apply a rather different typology to them perhaps the connected traveller, the liquid modernist, swimming in permanent beta, someone for whom the obvious and eager response to life's challenges, opportunities and changes is to move and connect, to travel and transport, as opposed to the *sedentarian*, for whom there is safety in stability, satisfaction in stasis, peace in passivity. The **questions** arising out of Trowler's earlier analysis and taxonomy are, how would the different categories or sub-cultures respond to our proposed paradigm, would they swim or sink? This is not to assume that these remarks or factors are generalizable to other places or communities that host a paradigm, merely that they illustrate the wealth of possible factors.

We need however at this point to clarify two inter-related questions of take-up and acceptance, the first being, will teachers, academics, lecturers and perhaps their managers, institutions and trainers switch their pedagogic allegiances and make the paradigm shift, and secondly, will their students and learners, and perhaps parents, employers and other stakeholders accept or even notice the shift? It could be argued that these are moot points and not even observable or verifiable since the evidence is often of dramatic differences between the espoused pedagogy and the enacted pedagogy, and of many in the education communities

not knowing or noticing any differences or changes in pedagogy. This is probably telling us that a paradigm shift in pedagogy can only be observed in teachers who actually have espoused a pedagogy, irrespective of whether they are enacted. Perhaps this kind of pedagogic change is propagated by authoritative thought leaders and teachers, and lecturers engaged with learners are swept along by the new orthodoxy. This is perhaps the point where Trowler's (1998) work or something similar is useful.

Another more pragmatic approach to change and shift is captured in the Concerns Based Adoption Model (Anderson 1997; Roach *et al* 2009). Again, this is nationally and culturally specific. It is included here to add to the diversity of perspectives and issues that might come, filtered through local culture, into play. It says that anyone attempting to promote change amongst academics must first reassure them that new practices will not involve loss of face or loss of job. In our discussion, this may not be possible, and this change or shift may not happen. So, we would ask, how does our proposed paradigm disturb, disconcert or appease teachers, lectures and researchers? Or their learners and managers? Evidence from various sources in the empirical data from digital literacy research suggests that lecturers are already feeling disempowered by students with greater digital competence than their own and perhaps this is not a good omen for a more radical shift. It does however reflect the increasing discrepancy between students' digital experiences within formal education and their digital experiences before, after and alongside formal education, in *real life*.

A similar factor may be any *theory of moral panic*, any theory that describes the artificial moral climate that inhibits change (Critcher 2008), and here we should remember press prognostications about cyber-bullying, sexting and mobiles (Goggin 2012) and how

these kinds of linkage might slow down any movement away from the status quo or any paradigm shift. This might however be contrasted or contradicted with the advantages of *positive deviance,* (Pascale *et al* 2010*),* meaning the advantages to oneself or others of breaking away from the crowd, of paradigm shifting.

So thirdly, what is the role of culture in change?

Noticing however that this was a very culturally specific analysis we must attempt to explicitly factor culture in, as best we can (Schein, 1991; Hall 1976). Anecdotal accounts of culture are of no use and we need ways to address the differences and distances between cultures as a way to predict the differences in their likely reaction to our proposed paradigm shift or educational innovation, to engage in some sort of cultural calibration.

The obvious source of the necessary tools and measures is Hofstede, his colleagues and competitors. His work (Hofstede 1997, 2001) looks at different cultures and proposes that any culture, strictly speaking any national culture, can be characterised by a handful of variables or dimensions or axes, by a handful of quantifiable variables on a handful of axes, for example,

- risk-taking vs. risk-avoidance
- individualism vs. collectivism
- hierarchy vs. equality
- the extent of gender inequality
- control vs. consensus
- short-term vs long-term orientation (Minkov & Hofstede 2012)
- indulgence vs. restraint (Hofstede & Minkov, 2010).

The details vary and perhaps are not in themselves important, but they have numbers (if one is interested at a country or nationality level, there is even a mobile app giving a straight

read-out across all the axes). These axes could tell us something about how well different pedagogic paradigms (social learning for example) are aligned to different cultures and enrich Rogers' account of the medium through which innovations or paradigm shifts travel. If we argued that the dominant global culture derives much from the relatively risk-taking and individualistic culture of North America, we can see why some globalised pedagogies fail to engage with cultures in other parts of the world, ones that are either more cautious or more communal, and why this might be true of our proposed new paradigm.

Obviously, there are concerns about granularity – are we working at an inappropriate national, regional or local level and making assumptions about homogeneity, stability and consistency? And there are other concerns about seeming to understand culture as merely one-dimensional and ignoring the ways in which individuals populate varied aspects of various cultures – generational, ethnic, religious, gendered, political, socio-economic and caste/class to name but a few. And this even without factoring in those more fragmentary, volatile and ephemeral cultures in cyberspace.

Alternatives to Hofstede, though ones exposed to comparable criticisms, propose various other dimensions, axes and attributes. One is the Lewis Model (1999), according to which cultures can be classified in relation to three main categories focused more on communication and interaction skills. These are firstly, linear-active, secondly, multi-active and thirdly, reactive. People in linear-active cultures demonstrate task orientation. They look for technical competence, place facts before sentiment, logic before emotion; they are deal-orientated, focusing their own attention and that of their community on immediate achievements and results. They are orderly, stick to agendas and inspire their community with their careful planning. Multi-active people are much more extrovert, rely on their

eloquence and ability to persuade and use human force as an inspirational factor. They often complete human transactions emotionally, investing the time to developing the contact to the limit. These people are networkers, working according to people-time rather than clock-time. Finally, people in reactive cultures are equally people-orientated but dominate with knowledge, patience and quiet control. They display modesty and courtesy, despite their accepted seniority. They create a harmonious atmosphere for teamwork. Subtle body language replaces excessive words. They know their communities well, giving them balance and the ability to react to complex pressures.

There is also the Inglehart-Welzel cultural map (Inglehart & Welzel 2005, 2010), dividing countries along axes of traditional vs secular-rational and survival vs self-expression values. Each of these dimensions is strongly correlated with scores of other important orientations. The traditional vs secular-rational values dimension reflects the contrast between societies in which religion is very important and those in which it is not. A wide range of other orientations are closely linked with this dimension. Societies near the traditional pole emphasize the importance of parent-child ties and deference to authority, along with absolute standards and traditional family values, and reject divorce, abortion, euthanasia, and suicide. These societies have high levels of national pride, and a nationalistic outlook. Societies with secular-rational values have the opposite preferences on all of these topics. The second dimension is linked with the transition from industrial society to post-industrial societies, which brings a polarization between survival and self-expression. The argument is that unprecedented wealth has accumulated in advanced societies in recent generations means that an increasing share of the population has grown up taking survival for granted. Thus, priorities have shifted from an overwhelming emphasis on economic and

physical security toward an increasing emphasis on subjective well-being, self-expression and quality of life.

Both of these alternatives to Hofstede suggest a variety of competing cultural factors that may inform education and research cultures and affect an innovation or paradigm shift.

This allows us to consider the influence of risk, authority, trust and consensus on shift, innovation and change. Rao *et al* (2018) discuss these in relation to education and learning.

The Politics of Our Paradigm

We should not assume however that these forces work themselves out in some neutral homogeneous space – no, digital technology is the product and expression, perhaps the defining characteristic, of one specific society, language, culture and political system, and the institutions and actors that espouse or resist paradigms and innovations are all positioned somewhere in a political (and economic and social) space. To be clear, we are talking about technologies that are mostly designed in America, made in China and sold by global corporations. The differential effect on aspects of learning and language are exemplified by, for example, the balance of languages supported or not supported by different mobiles, social media, translation technologies, word processors, dictation systems, autocorrect, operating systems, predictive texts, graphic interfaces and keyboards, and the likewise balance of pedagogies by different aspects of digital technology (Traxler 2017). The consequences for our proposed paradigm include the need to recognise the nature of hegemony in language, learning and digital technology and its impact on fragile languages, small market segments and less profitable pedagogies.

We must recognise, furthermore, in a more *small-p-political* sense, that the paradigms are usually expressed and operationalised as projects, as research projects and development projects and that these projects exist within the context of stable, albeit simplified, paradigms that determine which are funded, disseminated and managed. There is an argument that the project management environment is pre-disposed to steady improvement within established ideas, and that the funders of research projects are predisposed to projects that offer technical and tactical improvements within an established paradigm rather than (riskier) ones that challenge accepted thinking (Traxler 2016, refers to the global South but easily generalisable to the global context).

Unfortunately, our new paradigm is not the vanishingly small intersection on yet another Venn diagram of modern digital learning, purporting to be the next framework or model - its name misleads, all names do. This is especially true here, where we have a selection of adjectives seeming to constrain or limit the fundamental concept of learning without actually recognising that learning itself, in the world we are describing, is fundamentally changed (Traxler 2018a).

Our critique is based on the need to build a new learning, one based on the changed epistemological foundations of society and the changed basis for change, perhaps learning in liquid modernity (Bauman 2000). These epistemological foundations actually vary from culture to culture, from country to country; each community has its own history of learning and knowing, but all are impacted by movement and connection.

Furthermore, even in the limited context of a modernist discourse, we must not only consider the ongoing growth of mobility and connectedness in the technical senses but the

synergy and convergence with other technological developments. These undoubtedly include the Internet of things (IoT). In our current context this will have the effect of making the physical environment - or rather those parts that are economically and scientifically useful and technically possible - more wrapped into the digital environment, populating cyberspace and phone space with more varied active entities. Artificial intelligence (AI) will have a comparable impact as more apparent intelligence is built into the digital environment. So, we must position our paradigm accordingly. If it is to be of any valuable in the middle-term future, our new paradigm must offer the perception of increasing differential advantage or utility compared to its older competitors. Its axiomatic alignment with societies characterised by massive mobility and connectivity are clearly in its favour and needs to be worked through. Certainly, the connotations of *learning* and *language* will evolve ever more rapidly even if the denotations lag behind.

Espousing a 'Theory of Change' (TOC)

Of course, we could shift the focus from asking whether our new paradigm would propagate and embed to asking how we could ensure that it would! Certainly, Rogers and his followers have identified the various policy options and strategies that might be used within organisations and societies, and the relationships between them. These include exemplars, champions, opinion-formers, early adopters … the classic lexicon (Dooley 1999). So how would these work, how could we adapt Rogers' work to effect a paradigm shift?

If culture were not an issue, we could draw on the strategies implied across a vast range of initiatives that have exploited the diffusion of innovations concepts (Kezar & Eckel 2002; Dearing 2009; Jebeile 2003), namely co-opting innovators, opinion-formers and early

adopters, supporting small-scale pilots and projects, using informal channels alongside formal ones and as a last resort using regulation and enforcement.

We should however ask how well our new paradigm matches the earlier set[vi] of characteristics for a successful innovation and what do these criteria mean in the context of a conceptual and theoretical innovation. In terms of the first characteristic, we ask,

(1) Is it offering a relative advantage? We hope our new paradigm as it emerges is better aligned to people's experiences of the societies in which they live.
(2) Is it trialable? Our new paradigm, being conceptual, can clearly be tested alongside any existing paradigm, and thought experiments can be devised to refine it.
(3) Is it compatible, meaning compatible with existing values, past experiences, and needs of potential adopters? This is interesting because at a certain point these past experiences begin to lose their coherence and cease to meet the needs of existing adherents and thus provide the opportunity for a new paradigm.
(4) Is it perceived as complex? We hope not, because the whole point of a paradigm shift is to resolve confusion and reduce complexity.
(5) Is it observable? As the new paradigm becomes operationalised, meaning as a research agenda emerges, with foundational texts and leading advocates, opportunities emerge to observe its implications and consequences.

The second characteristic is communication, meaning the means by which an understanding and acceptance of paradigms takes place. For our new paradigm, there is a complication in that whilst academia already has its channels, both formal and informal, our new paradigm proposes a better alignment with societies where mobility and connection

redefine these channels. So, our new paradigm is by definition better suited to these societies. This is compounded with the time characteristic. We suggest our new paradigm can out-compete any older ones in terms of the rapidity with which it can spread, again, because by its nature it is more attuned to digital media than its predecessors.

Finally, there is innovativeness, the degree to which individuals, organisations or social systems. This is mostly where culture kicks in. We must ask, if we use Hofstede's dimensions, questions like, how attractive is our new paradigms to risk-taking or to risk-averse cultures, to consensual or authoritarian cultures, to individualistic or collectivist cultures? We are however talking mostly about the cultures inside educational research, and its communities and institutions, inflected somewhat by the culture of their host societies, and this takes us back to some analysis comparable to Trowler's, suggesting responses that are fragmented across a range of categories. Again, the medium is the message, or rather, the culture is the innovation, because digital media define their cultures, alongside and entwined with physical ones, suggesting our new paradigm is innately aligned to digital culture.

However, our new paradigm is not comfortably situated in a modernist discourse; its analysis is based around an account of societies that are distinctly postmodern. There are accounts of the impact of digital technology, on the abundance of mobility and connectedness, that range from the merely evidence-based, technical and quotidian (which in the current context it might be inappropriate to identify) to the speculative and philosophical (for example Kirby 2009; Fortunati 2002; Geser 2004; Nyı´ri 2007; Cooper 2002) and so it is not fanciful to see our new paradigm as potentially or partially postmodern, especially given the centrality of language. This does however put it in an uneasy relationship with modernity, the mother of paradigms; in that sense our proposed paradigm is perhaps paradoxical.

The New Paradigm

Taking a canonical Kuhnian approach, our new paradigm is based upon the following axiom, subject to improvement and revision

> *in most societies today, characterised as they are by permanent, ubiquitous and pervasive connectedness and mobility, language and learning and digital technology are no longer separable or discrete; they are simply and merely manifestations and aspects of the ways things now are, skewed however by the powerful interests that control bandwidth and connectivity, that control the design and manufacture of technology, that control education systems and economic opportunities*

This only has to be plausible, not objectively or verifiably true, and to be thought to be effective in solving or resolving discrepancies and discomforts in earlier paradigms.

If we have to give our new paradigm a name, then provisionally and clumsily, it is the ***mobility, learning and language*** paradigm.

And in talking of societies characterised by mobility, we embrace "five highly interdependent 'mobilities' that form and re-form diverse networks:

- corporeal travel of people for work, leisure, family life, pleasure, migration and escape.
- physical movement of objects delivered to producers, consumers and retailers.

- imaginative travel elsewhere through images of places and peoples upon TV (1 billion worldwide).
- virtual travel often in real time on the internet so transcending geographical and social distance.
- communicative travel through person-to-person messages via letters, telephone, fax and mobile."

(Urry 2007: 47 & elsewhere)

and take these as the transformed foundations of language and learning. Broadly speaking our research agenda could then address questions like,

- 'what, in more detail, characterises and differentiates these societies, from each other and from earlier models of society?',
    - in terms, for example, of social practices and norms, political organisation and activity, economic transactions and commodities, expressive and creative genres, the nature of culture and hegemony, the nature of epistemology and ontology, the nature of exclusion, development, disenfranchisement and disadvantage
    - how does our particular depiction of societies align or interact with other parallel depictions of societies impacted by climate change and ecological degradation, or by the rise of neo-liberalism, populism, radicalism and nationalism?
- 'what is the nature of learning, and what is its purpose?' which leads to more specific questions about the definition and nature of epistemology, pedagogy and didactics,

    - and practically how should we conceptualise the roles and responsibilities of educators, their organisations and institutions and their practices and procedures, such as courses, exams, qualifications and
    - the nature of learning in relation to existing pedagogic theories such as connectivism, constructivism etc?
- ‘what is the nature of language?’, meaning what are the symbols, conventions, interactions, contexts, media and gestures that constitute the language used to exchange meaning and feeling?
    - how do we understand ecology of dialects, lingua franca, mother tongues and global power languages in a world where so much language is mediated digitally? What shapes and controls language?
    - how do real-time translation, voice activation, auto-correct, emojis and home automation change, for example, the nature of language, community and communication?
    - given the emergent postmodern stance of our axiom, what is the nature of language in shaping the society we describe in our axiom (as opposed to a modernist position that language merely recorded it)?
- ‘what is the nature of research?’, meaning what are the methods, tools and techniques; what constitutes proof, reason, logic, trustworthiness and authority; how do we explore the changed human condition and its social context?
    - And how in practical terms would the research community operate in a world of fractured fluidity? Are journals, conferences, studentships and the other formats still adequate? Are questionnaires, surveys, focus groups, semi-structured interviews and other accepted research tools still sufficient?
    - Are there implications for project management, research management etc?

and, having deconstructed research, language and learning within the constraints of our foundational axiom and depiction of societies,

- ‘how does the emerging community research the interaction between language and learning?’

Whilst language has always been in some senses the property of some hegemony, the current hegemons are mostly anglophone global digital corporations and our axiom explicitly recognises and problematizes this observation. Perhaps,

- ‘how would the concerns of a critical pedagogy interact with our axiom?’

Some of these questions and themes may seem grandiose in relation to the mission of an educational paradigm but there is, for example, a straight line from mobile digital technology to increased populist radicalism via the Arab Spring and the cyber Intifada, and from global corporate capitalism to fragile mother tongues via the information superhighway. And we should point out that these are not necessarily new questions – there is no reason why they necessarily should be - but merely some questions to be addressed within the context of the new paradigm’s defining axiom.

The consequences of thus articulating our paradigm should be not only the formulation of the associated research agenda, but also the scholarly community and the foundational texts that are part of it.

The breadth and diversity of the outputs and personalities from within the ‘sociology of mobilities’ are clear candidates for our new paradigm. They provide a gradually increasing range of insights and perspectives on the transformation of our societies, and a reorientation in terms of methods that recognise movement as crucial manifold for our perceptions and understandings (Büscher & Urry 2009). Perhaps we are simply proposing to add learning

and language dimensions (this is understandably still a paradigm struggling to define its boundaries and its relationship with earlier sociology, that one might call the *sociology of immobility*).

What Have We Learnt?

The purpose of this paper was to stimulate and provoke researchers in various communities to think about their work, their direction and findings in a wider context, and to raise helpful and productive questions. We have done this, firstly, by demonstrating that some merger of ideas and methods from the *diffusion of innovations* and the *structure of scientific revolutions* enables us shape intellectual progress and secondly, by formulating new perspectives at the intersection of language, learning and digital technology within our rapidly transforming societies. This is a work in progress but does, however, provide plenty of clues as to how we may test, refine and improve both these.

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[ii] Because of the impact of iPhone and the change in the political and economic zeitgeist.

[iii] Refers appositely to, "La révolution dévore ses enfants" from an essay by Jacques Mallet du Pan in 1793.

[iv] Meaning the global economic change precipitated by the sub-prime mortgage crisis in the USA and the collapse of bankers such as Leamann Brothers

[v] https://www.theoryofchange.org/what-is-theory-of-change/

[vi] See the sub-section," Secondly, what constitutes an innovation and what governs its diffusion?"